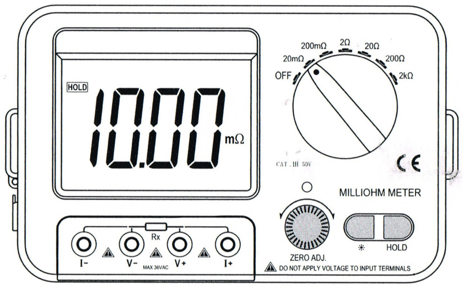
VC480C Instruction Manual

DIGITAL MILLI-OHM METER OPERATION MANUAL



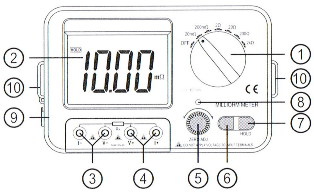
The product is a precision instrument. To avoid damage and injury caused by wrong operation, please read the operation manual carefully before operation.

Contents

1. General Description

Adopting a high stable constant current source, this milli-ohm meter can make 4-wire resistance measurement via accurate digital bridge. It can measure resistance over 0.01mΩ, different conductors, electric heating components, soldered point resistance, etc. The main features of this instrument include, easy to operate, wide test range, highly stable performance, backlit LCD display, data hold and auto power off. Using a shoulder strap, it can be used by both hands. It is an ideal instrument that can be used in measuring contact resistance of power resistor, motor coils, transformers, PCB, cables, antenna, communication equipments, electric machines, electrical facilities, etc.

2. Panel Descriptions



1).Power switch/function switch: power ON/OFF the instrument and selects functions. To save power,

please turn the switch to "OFF" when it isn't in use.

2).LCD display: displays testing results and unit symbols

3).Input terminal for the black test lead

4).Input terminal for the red test lead

5).Zero knob: used to calibrate the zero readings in mΩ range

6)." ☀ " key: LCD backlight ON/OFF key

7)."HOLD" key: press to hold the current readings on the LCD. The LCD will display "HOLD" symbol. Press again to cancel the data hold function.

8).Power indicator (LED)

9).Terminal of 9V DC adapter (⊙-◑-⊖). It is used to connect to external power source for power supply.

10).Shoulder strap locker: used to lock the shoulder strap so that the instrument can be hung on the neck to save hands.

3. Technical Specifications

General Specifications

1) Display: 3 1/2 LCD display, max.display 1999

2) Over range indication: displays "1" when exceeding upper limit

3) Zero adjustment: calibrated to zero by external tools

4) Sampling rate: approx.3 times/Sec.

2

5) Low battery indication: the LCD display " ▭ " symbol.
6) Additional temperature coefficient: 0.15 x specified accuracy/℃(<18℃ or >28℃)
7) Altitude: <2000m
8) Operation environment: in-door use; pollution degree II; temperature -15℃~55℃, relative humidity <75%RH
9) Storage environment: temperature -40℃~60℃, relative humidity <90%RH
10) Power source: AA battery (1.5V) x6 (or external 9V DC adapter).
11) Power consumption: ≤120mA
12) Fuse: 150mA/60V resettable fuse
13) Dimension: 175 (L) x 116 (W) x 62.5 (D) mm
14) Weight: 580g (including battery)

Technical data

Accuracy:±(a% rdg+ least effective digits)
Optimum environment for accuracy: temperature (23±5)℃, relative humidity<75%
Calibration warranty: 1 year from off-factory date

Range	Accuracy	Resolution	Testing current
20 mΩ	±（1.5%rdg±3）	0.01 mΩ	Approx.100mA
200 mΩ	±（0.5%rdg±3）	0.1 mΩ	Approx.50mA
2Ω		1 mΩ	
20Ω		10 mΩ	
200Ω		100 mΩ	
2kΩ		1Ω	

3

4. Operation Instructions

1) For the first time of operation, please make sure there is enough power source. If not, open the battery door and put into 6 PCS of AA batteries (Refer to battery replacement on page 8). Pay attention to the battery polarities.
2) When connecting to an external DC adapter, the battery power supply will be shut off, and don't charge the batteries. NOTE: Choose a correct power supply mode (⊕-Ͽ-⊖).
3) To ensure measurement accuracy, warm up the instrument for at least 10 seconds before operation.
4) Before measurement, make sure the 4-wire test leads are intact. Do not use broken test leads.
5) To check whether the instrument is working properly or not, please test a resistor of known resistance before other measurements.
6) To avoid damage to instrument circuit, do not input voltage to the 4-wire test lead socket.

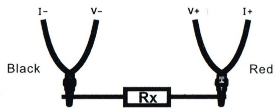
Principles:

1) Refer to the following illustrations. There is a testing current going through the range from "I+" to "I-"
2) This current is going through a resistor Rx (resistance value is unknown)

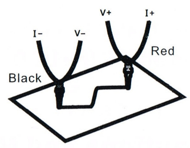
3) The voltage Vx can be measured on terminal Rx1/Rx2: Vx=Rx x Is, hence Rx=Vx/Is
4) The unknown resistance value can be calculated via Vx value, and will be displayed on the LCD.
5) To have an accurate resistance value, please make zero adjustment before measurement.

5. Resistance Measuring Method:

1) Input the two connectors of the red test lead into the two red sockets of the instrument on the right side, and the two connectors of the black test lead to the two black sockets of the instrument on the left side.
2) Tune the switch to a suitable range.
3) Clamp the 0 ohm short circuit terminals with two test clips, and adjust the zero knob to make the reading as 0.
4) Once a new range is selected, the zero adjustment should be done before measurement.
5) To measure an unknown resistor Rx, follow the following method as illustrated below:



6) To measure a resistor on a PCB, ollow the following method as illustrated below:



7) The test result will be displayed on the LCD.

CAUTION!

1). If the tested resistance is over 2kΩ or there is an open circuit, the LCD displays "1".

2). When testing a live resistor, to ensure safety, do not proceed testing until the tested circuit is completely powered off and all capacitors are fully discharged.

3). If testing results have considerable errors, it may be caused by other live components in the same circuit or by electric potential on the two ends of the resistor.

4). Do not input voltage to the resistance range!

6. Data Hold and Backlit Display

Data Hold:

Press the "HOLD" button, the current data will be held on the LCD. Press the "HOLD" button again to cancel data hold.

NOTE: There is no data hold function during insulation resistance measurement.

Backlit Display:

Pressing "☀" button, the LCD backlight turns on.
Pressing "☀" button again, the LCD backlight turns off.

7. Safety Precautions and Maintenance

The tester is a precise instrument. User is not allowed to apply any modification to the instrument circuit.

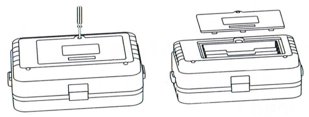
CAUTION!

1). To ensure safety, the measuring object must be completely shut off from power supply and must be testified by short circuit to be fully discharged and doesn't have any electrical hazard.
2). Do not apply voltage measurement to the input terminals.
3). Do not apply any measurement until the instrument's batteries are well installed or until the rear cover is well loaded.
4). Before replacing battery or replacing fuse, remove all test leads from the measuring object and turn off the power switch.
5). Keep the instrument away from water and dust. Do not fall or throw the instrument on ground.
6). Keep the instrument away from high temperature, high humidity, flammable, explosive

and strong magnetic environment.
7). Use a piece of soft cloth with mild detergent and water to clean the instrument. Do not use any abrasives or strong solvent.
8). If you don't use it for a long time, take out the batteries from the instrument to avoid battery leakage damaging the instrument.
9). When you use 9V battery, if the LCD displays low battery symbol " ▭ ", replace battery according to the following steps:

Battery Replacement

1). Use a screw driver to open the battery door's screws, and take off the battery door.
2). Take off the battery and replace it with a new one. To ensure long time battery power supply, it is recommended to use alkaline batteries.
3). Close the battery door and tighten the screws.



Fuse Replacement

The instrument uses a 150mA/60V resettable fuse. In case of replacement, please use the fuse of same specification, and follow instructions as below:

1). Tune the function switch to "OFF"position.
2). Use a screw driver to loosen the screws on the bottom, and take off the bottom cover.
3). Remove the screws on PCB, and take off the PCB.
4). Locate the resettable fuse on the PCB, which is marked with "FUSE". Use a soldering iron to take off the fuse and replace it with a new one of the same spec.
5). Re-load the PCB, bottom cover and screws.

CAUTION!

The instrument uses a resettable fuse, which will protect the internal circuits once wrong operations occur. Once the wrong operation is canceled, the fuse will automatically reset, no need to change fuse. If the replacement is in need, use the fuse of same spec.

8. Standard Accessories

1). Digital milli-ohm meter x1pcs
2). 4-wire test lead x1 pair
3). AA battery(1.5V) x6pcs
4). Operation manual x1pcs
5). Shoulder strap x1pcs

9. Trouble Shooting

If the instrument dose not work properly, the following self-check steps will help to solve general problems. If the fault still exists, please contact the maintenance or local distributor.

Fault	Solution
No display	■ Power off - please turn on the power ■ Replace the batteries
“ 🔋 ” symbol appearance	■ Replace the batteries
Error value	■ Replace the batteries

- **The operation manual is subject to change without prior notice.**
- **The contents in this operation manual are considered to be correct. If user finds out any mistakes or omissions, please contact the manufacturer.**
- **The manufacturer will not be responsible for any accident or damage caused by improper operation.**
- **The functions described in this manual are not reasons for any special usage.**